

HOWARD LAWRENCE SCHRIEFER, PE
4311 Webster-Lapidum Road
Havre de Grace, MD 21078
Phone: (410) 939-7007 FAX: (410) 939-2674
eMAIL: sdex@erols.com Internet: entroPULSE.com

11/12
12/30/10

Harford County Government
Facilities & Operations
611 N. Fountain Green Road
Bel Air, MD 21015
Att: Timothy Myers

AH274A

Addressee Phone: (443) 807-3036
Addressee FAX: (410) 838-4610

RE: Structural Investigation @ 212 South Bond Street, Bel Air, MD

******* CRITICAL INTERIM REPORT *******

BUTLER COMPS, page 1, shows Roof Dead Load @ 5psf.

BUTLER COMPS, page 2, shows Design Dead Load @ 50psf, including 42psf for slab; and, 2psf Ceiling & Lighting, 2psf Floor Joists, 4psf MISC.

Since the Roof Joist count is half that of the Floor Joists because of farther spacing, similar logic would result in a Roof Dead Load @ 9psf, including say 2psf Metal Deck, 2psf Ceiling & Lighting, 1psf Roof Joists, 4psf MISC for original design. Since original construction, the roof has been renovated with suspected block insulation and rolled roofing. This would add another 3psf Rolled Roofing plus 2psf Insulation for an actual requirement of 14psf for current analysis.

.....
BUTLER COMPS, page 45, shows a L5X3X1/4 concrete pour-stop with Nelson studs. The 5X3 angle is shown welded to the Floor Truss top chord using a 1/8" field fillet weld. The weld is situated directly above truss-end bearing center. Furthermore, BUTLER COMPS, page 38, indicates the truss top chord to have a thickness of 0.108". A 1/8" fillet weld would exceed the Maximum Fillet Weld Size as specified by AISC:

"The maximum size of fillet weld used along the edges of pieces being joined is limited by AISC-1.17.3 in order to prevent the melting of the base material at the location where the fillet would meet the corner of the plate if the fillet were made to the plate full thickness. The maximum permitted is:

1. Along edges of material less than 1/4" thick, the maximum size may be equal to the thickness of the material.
2. Along edges of material 1/4" thick or more in thickness of material, unless the weld is especially designated on the drawings to be built out to obtain full throat thickness."

A similar, however less serious, situation is shown on BUTLER COMPS, page 45, where a 1/8" field fillet stitch weld @ 18" OC is indicated where the concrete pour-stop is parallel with the truss chords.

Additionally, BUTLER COMPS, page 38, indicates end-diagonal-reinforcement for the trusses at the top-bearing end to the proximally respective bottom chord end. The material thickness are indicated as:

HOWARD LAWRENCE SCHRIEFER, PE
4311 Webster-Lapidum Road
Havre de Grace, MD 21078
Phone: (410) 939-7007 FAX: (410) 939-2674
eMAIL: sdex@erols.com Internet: entropULSE.com

1. Top Chord @ 0.108"
2. Bottom Chord @ 0.078"
3. Diagonal @ 0.090"

The diagonal is shown to be 1/8" fillet X 3" long on both sides at each end of the top and the bottom chords. I consider such welds as inadequate per AISC and furthermore detrimental to the bearing capacity and associated shear strength of the trusses. The end support capacity of the joists is judged to be a maximum of 62%, and possibly much less, than that intended by the design. I therefore believe that the floor deflections are the result of strain-related creep in the welded connections of the floor trusses.

The creep is apparently causing progressive dislocations which can result in failure with little warning. Such a failure can initiate as cascading truss bending failure with downward rupture and folding of the floor slab, and collapse onto the floor slab beneath, which if unsupported by ground would also collapse until halted by the ground. I consider the structural stability of the building to be unsafe for occupancy. I recommend immediate stacked shoring of the floor slabs at truss midspans down to ground and subsequent removal of all live loads until replacement of the floor joists with SJI approved joists. I further recommend shoring of the roof trusses because the actual dead loads are above those claimed in the design, combined with truss capacity which is less than that claimed in the design.

Your comments and/or questions are welcome.

NOTICE:

The information contained in this report and the documents referenced herein, based upon my training and experience, and to the best of my knowledge at this time is valid. Use of this report, and herein referenced documents requires competence and prudent judgment by all concerned. Should any of the hereincontained information be found to be invalid, the discoverer of any such invalidity shall immediately notify the Engineer whose seal is hereon affixed. Engineer reserves the right to declare this document and all information contained herein null and void, and to retract any signature and/or seal hereto affixed, for nonpayment by client to engineer for related technical services.